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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/162,103	09/28/1998	DIETER WINKLER	2935/PDC/ICT	8426

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APPLIED MATERIALS, INC.
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SANTA CLARA, CA 95050

EXAMINER

FERNANDEZ, KALIMAH

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/162,103

Applicant(s)

WINKLER ET AL.

Examiner

Kalimah Fernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 32 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 32 depends upon claim 7, which requires said minicolumn to be non-translatably positioned within said main chamber. Therefore, the additional limitation "wherein the tilt is variable" render claim 32 indefinite. Since, varying the tilt of said minicolumn would contradict said mini-column being non-translatably positioned as required in claim 7.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,5-6,18,21 and 27-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No. 5,399,860 issued to Miyoshi and in view of JP Document 4041168³/₄ issued to Ito et al.

3. Miyoshi teaches an electron microscope having a main vacuum chamber (40) housing a stage (42) therein.
4. Miyoshi teaches a minicolumn (10) positioned inside said main chamber (40) (col.6, lines 37-68; fig. 3). Miyoshi teaches said minicolumn (10) having a mini-environment defined housing (10a) (see col.4, lines 38-45).
5. Miyoshi does not teach a load lock for loading a specimen into said main chamber.
6. However, Ito et al teaches a main vacuum chamber (14) housing stage (20) therein and connected to a vacuum pump (see fig.2).
7. Ito et al discloses a load lock (18) for loading a specimen into said chamber (see abstract).
8. It would have been obvious to an ordinary artisan to incorporate the teachings of Ito into Miyoshi since Ito teaches the ability to easily obtain SEM image of cut face of a sample (see abstract).
9. As per claim 5, Ito et al discloses a second chamber (18) having an associated value for hermetically sealing the opening between the said second chamber (18) and sample chamber (14) (see fig.2).
10. As per claims 27-30, Miyoshi teaches mounting said minicolumn (10) to a stationary platen (52) (i.e. back plate) (col.6, lines 50-65).
11. As per claims 18 and 21, Miyoshi teaches a plurality of minicolumn (col.7, lines 34-44).

12. Claims 2-3,8,11,19-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi and Ito as applied to claims 1,7 and 21 above, and further in view of US Pat No 5,229,607 issued to Matsui et al.

13. The obvious combination of Miyoshi and Ito has been discusses except for tilted minicolumn(s); extracting a minicolumn and a bellow structure.

14. However, Matsui et al discloses an additional tilt-able minicolumn situated inside a main chamber (204) (fig.9; col.11, lines 45-59).

15. In addition, Matsui et al teaches a x-y-z mechanism for moving the minicolumn (1) and a bellow structure (109) to facilitate said movement of the minicolumn (col. 6, lines 40-58).

16. It would have been obvious to an ordinary skilled artisan to incorporate the teachings of Matsui into the obvious combination of Miyoshi and Ito since Matsui teaches the ability of monitoring the localized processes (col.11, lines 38-44).

17. As per claim 8, Matsui teaches a back plate (111) connected to SEM tube (1), which can be removed (col.7, lines 63-67).

18. As per claim 11, Miyoshi teaches a vacuum pump (34) situated inside said minicolumn (10) (see col. 6, lines 14-30) while Matsui teaches all limitations of claim 7.

19. As per claim 23, Matsui et al teaches varying the tilt (col.11, lines 51-59).

20. Claims 1,4 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 4,864,228 issued to Richardson and in view of US Pat No 5,502,306 issued to Meisburger et al.

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21. Richardson teaches an electron microscope having a main vacuum chamber (192) housing a stage (194) therein and connected to a vacuum pump (col.20, lines 14-18).

22. Richardson et al teaches a mini-column (187) and a mini-environment (190) housing said mini-column (187) (see fig. 12).

23. Richardson does not explicitly teach a load lock for loading a specimen into said main chamber.

24. However, Meisburger et al teaches a load lock (224,226) for loading a specimen (57) into a main vacuum chamber (206) housing a stage (24) (col.16, lines 4-20; see fig.8).

25. It would have been obvious to an ordinary artisan to incorporate the teachings of Meisburger et al into Richardson since Meisburger et al teaches time-efficiency (col.4, lines 56-58; col.3, lines 1-5; col.16, lines 11-15).

26. As per claim 4, Richardson teaches a mini-environment (190) having an evaluation means (col.20, lines 34-47).

27. As per claims 27-28, Richardson teaches a back plate, which fixes the x and y mechanisms attached/connected to mini-column (187) (see fig.12).

28. Claims 12-17 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 5,229,607 issued to Matsui et al and US Pat No 4,058,731 issued to Muller et al.

29. Matsui et al teaches a main vacuum chamber (17) connected to a vacuum pump (21,22) (col.8, lines 14-25) and housing a X-Y-Z stage (4) (col.5, lines 4-7); a holding arm (2) (see. Fig.9; col.11, lines 51-59); a minicolumn (1) attached to said holding arm.
30.

31. Matsui et al does not teach a turntable. However, Muller et al teaches a turntable (2) (col.5, lines 4-7).

32. It would have been obvious to an ordinary artisan to incorporate the teachings of Muller into Matsui et al since Muller teaches the improvement of controlling rotational movement in angular increment (i.e. increased control) (col.2, lines 4-25).

33. As per claim 13, Matsui et al teaches a radial pivot (227,228) (see col.11, lines 51-56).

34. As per claim 24, Matsui et al teaches a mini-column attached to a holding arm structure (col.11, lines 50-59). Matsui, also, teaches a plurality of mini-columns.

35. Matsui does not explicitly teach a plurality of mini-columns attached to said holding arm structure.

36. However, an ordinary artisan would find it obvious to extend the holding arm structure depicted in fig.9 to accommodate the additional SEM tube shown in fig.11 since Matsui teaches arranging said minicolumn(s) along a circular arc (col.12, lines 51-59).

37. Claims 7, 9-10, and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PAT 5,229,607 issued to Matsui and in view of Ito.

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38. Matsui et al teaches a main vacuum chamber (204) housing a stage (4) therein (col.12, lines 51-64) and connected to a vacuum (col.11, lines 45-50).

39. Matsui et al teaches a minicolumn non-translatably positioned inside said main chamber (col.12, lines 51-64; see fig. 11).

40. Matsui does not explicitly teach a load lock. However, Ito et al teaches a main vacuum chamber (14) housing stage (20) therein and connected to a vacuum pump (see fig.2).

41. Ito et al discloses a load lock (18) for loading a specimen into said chamber (see abstract).

42. It would have been obvious to an ordinary artisan to incorporate the teachings of Ito into Miyoshi since Ito teaches the ability to easily obtain SEM image of cut face of a sample (see abstract).

43. As per claims 9 and 31-32, Matsui et al teaches at least one tilted minicolumn (1-1) situated inside said main chamber (204) at a tilt with respect to a perpendicular to a surface of the stage (4) (col.12, lines 58-63).

44. As per claim 10, Matsui et al teaches tilting said minicolumn about a circular arc without a definite tilt by assumes a variable tilt with respect to one another (col.12, lines 58-62).

45. Claims 7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al '607 and US Pat No 5,502,306 issued to Meisbuger et al.

46. Matsui et al teaches a main vacuum chamber (204) housing a stage (4) therein (col.12, lines 51-64) and connected to a vacuum (col.11, lines 45-50).

47. Matsui et al teaches a minicolumn non-translatably positioned inside said main chamber (col.12, lines 51-64; see fig. 11).

48. Matsui et al does not explicitly teach a load lock however Meisburger et al teaches a load lock.

49. It would have been obvious to an ordinary artisan to incorporate the teachings of Meisburger et al into Matsui et al since Meisburger et al teaches time-efficiency (col.4, lines 56-58; col.3, lines 1-5; col.16, lines 11-15).

Response to Arguments

50. Applicant's arguments filed 12/10/02 have been fully considered but they are not persuasive. Applicant contends that Miyoshi et al does not teach a minicolumn or a mini-environment that houses a minicolumn.

51. Contrarily, as stated in the office action mailed on 6-5-02, Miyoshi et al teaches a mini-environment defined in the case (10a), wherein said case (10a) houses the electron gun (21), an aperture (26a), and lens arrangement (22) within said mini-environment (col.4, lines 33-44). Miyoshi et al teaches creating said mini-environment by employing a vacuum pump (col.3, lines 51-66; col.6, lines 14-30).

52. Therefore, Miyoshi et al does disclose a minicolumn (10) housed within a mini-environment as recited.

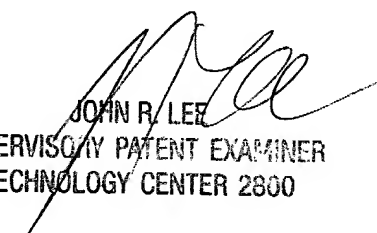
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Conclusion

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

kf
March 10, 2003


JOHN R. LEE
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